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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/915,191	07/24/2001	Alberto Ginesi	10.1018	5300
21919	7590	12/28/2005	EXAMINER	
MEREK, BLACKMON & VOORHEES, LLC 673 S. WASHINGTON ST. ALEXANDRIA, VA 22314			MERED, HABTE	
			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/915,191

Applicant(s)

GINESI, ALBERTO

Examiner

Habte Mered

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed on 11 October 2005 has been entered and fully considered.
2. Claims 1-20 are pending.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-4, 6-10, 12-15, and 17-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross et al (US 6, 266, 348), hereinafter referred to as Gross, in view of Levin (US 6, 775, 241).
5. Regarding **claims 1 and 8**, Gross discloses a method of initializing a communication link between a first transceiver and a second transceiver for transferring data there between (**Figure 3; Column 5, Lines 11 and 42; Column 7, Line 13**) the method comprising: analyzing channel properties of a plurality of sub-channels within the communication link (**Column 2, Lines 15-34 and 54-58; Column 16, Lines 5-14 and 33-36**); identifying a predefined number of sub-channels having an anticipated highest performance for communication (**Column 5, Lines 45-65 and Column 6, Lines 16-29; Column 18, Lines 51-56**); Gross discloses those sub-channels in the **Primary and Secondary Channel Control Tables** are selected for use that meet the **acceptable BER and have high SNR.**); communicating the sub-channels between the

first and second transceivers (**Column 2, Lines 20-25; Column 5, Lines 51-54; Column 16 , Lines 19-24; Figs 2 and 5 show bit allocation tables that are exchanged between the transmitter and receiver and contains the high performing sub-channels(SC) with the number of bits allowed on the channel and the gain on the channels.) and transmitting information for initializing the communication link using the sub-channels (Column 16, Lines 19-23 and Column 18, Lines 51-67).**

Gross fails to expressly disclose a method wherein the step of identifying a predefined number of sub-channels having an anticipated highest performance for communication and the step of communicating the sub-channels between the first and second transceivers are performed between a channel analysis phase and an exchange phase of initialization.

Levin discloses a method and apparatus for configuring an ADSL system.

Levin discloses a method wherein the step of identifying a predefined number of sub-channels having an anticipated highest performance for communication (**See Figure 2, Step 24**) and the step of communicating the sub-channels between the first and second transceivers (**See Figure 2, step 24**) are performed between a channel analysis phase (**See Figure 2, step 22**) and an exchange phase of initialization (**Based on the definition exchange phase described by the Applicant, in the specification on page 3 in paragraph 13, the exchange phase starts at step 30 of Figure 2 – See also Column 4, Lines 50-65**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gross's method of identifying and transmitting a predefined number of sub channels with high performance between the channel analysis phase and exchange phase of initialization, as suggested by Levine. The motivation being expediting the overall synchronization process by efficiently transmitting optimized parameters like sub channels with high performance without using complex iterative calculation as described by Levine in Column 3, Lines 20-29.

6. Regarding **claim 9**, Gross discloses an apparatus in an asynchronous digital subscriber line (ADSL) central office termination unit (ATU-C) for improving performance of a communication link, comprising a processor configured to control the ATU-C to execute processing that includes **(Figures 3 and 4; Figure 4 is applicable to both ATU-C and ATU-R; Column 24, Lines 40-43)**: analyzing channel properties of a plurality of sub-channels within the communication link **(Column 2, Lines 15-34 and 54-58; Column 16, Lines 5-14 and 33-36)**; identifying a predefined number of first sub-channels having an anticipated highest performance for communication **(Column 5, Lines 45-65 and Column 6, Lines 16-29; Column 18, Lines 51-56; Gross discloses those sub-channels in the Primary and Secondary Channel Control Tables are selected for use that meet the acceptable BER and have high SNR.)** ; communicating, to an ADSL remote termination unit (ATU-R), the first sub-channels **(Column 2, Lines 20-25; Column 5, Lines 51-54; Column 16 , Lines 19-24; Figs 2 and 5 show bit allocation tables that are exchanged between the transmitter and receiver and contains the high performing sub-channels(SC) with the number of**

bits allowed on the channel and the gain on the channels.);receiving, from the ATU-R, information identifying a predefined number of second sub-channels(**Column 6, Lines 17-21; Column 17, Lines 32-45; The secondary sub-channel is really secondary channel control table and is shown in Figures 3-5**); receiving, from the ATU-R using the second sub-channels, information for initializing the communication link (**Column 16, Lines 19-23 and Column 18, Lines 51-67**); and transmitting, to the ATU-R using the first sub-channels, information for further initializing the communication link (**Column 16, Lines 19-23 and Column 18, Lines 51-67**).

Gross fails to disclose the identification of sub channels for high performance communication and communicating a set of sub channels to the ATU-R occurs during the interval between the channel analysis and exchange analysis phase of initialization.

Levin discloses the identification of sub channels for high performance communication and communicating a set of sub channels to the ATU-R occurs during the interval between the channel analysis and exchange analysis phase of initialization. **(See Figure 2 steps 24-30 and Column 4, Lines 50-65 and based on the definition exchange phase described by the Applicant, in the specification on page 3 in paragraph 13, the exchange phase starts at step 30 of Figure 2 and the channel analysis phase starts at step 24 of Figure 2).**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gross's method of identifying and transmitting a predefined number of sub channels with high performance between the channel analysis phase and exchange phase of initialization, as suggested by Levine. The

motivation being expediting the overall synchronization process by efficiently transmitting optimized parameters like sub channels with high performance without using complex iterative calculation as described by Levine in Column 3, Lines 20-29.

7. Regarding **claim 14**, An apparatus in an asynchronous digital subscriber line (ADSL) remote termination unit (ATU-R) for improving performance of a communication link, comprising a processor configured to control the ATU-R to execute processing that includes **(Figures 3 and 4; Figure 4 is applicable to both ATU-C and ATU-R; Column 24, Lines 40-43):** analyzing channel properties of a plurality of sub-channels within the communication link **(Column 2, Lines 15-34 and 54-58; Column 16, Lines 5-14 and 33-36;** identifying a predefined number of first sub-channels having an anticipated highest performance for communication **(Column 5, Lines 45-65 and Column 6, Lines 16-29; Column 18, Lines 51-56; Gross discloses those sub-channels in the Primary and Secondary Channel Control Tables are selected for use that meet the acceptable BER and have high SNR.);** communicating, to an ADSL central office termination unit (ATU-C), the first sub-channels **(Column 2, Lines 20-25; Column 5, Lines 51-54; Column 16 , Lines 19-24;Figs 2 and 5 show bit allocation tables that are exchanged between the transmitter and receiver and contains the high performing first set of sub-channels(SC) with the number of bits allowed on the channel and the gain on the channels.);** transmitting, to the ATU-C using the first sub-channels, information for initializing the communication link **(Column 16, Lines 19-23 and Column 18, Lines 51-67);** receiving, from the ATU-C, information identifying a predefined number of second sub-channels **(Column 6, Lines**

17-21; Column 17, Lines 32-45; The secondary sub-channel is really secondary channel control table and is shown in Figures 3-5); and receiving, from the ATU-C using the second sub-channels, information for further initializing the communication link(**Column 16, Lines 19-23 and Column 18, Lines 51-67**).

Gross fails to disclose the identification of sub channels for high performance communication and communicating with the ATU-C using these set of sub channels during the interval between the channel analysis and exchange analysis phase of initialization.

Levin discloses the identification of sub channels for high performance communication and communicating with the ATU-C using these sets of sub channels during the interval between the channel analysis and exchange analysis phase of initialization. **(See Figure 2 steps 24-30 and Column 4, Lines 50-65 and based on the definition exchange phase described by the Applicant, in the specification on page 3 in paragraph 13, the exchange phase starts at step 30 of Figure 2 and the channel analysis phase starts at step 24 of Figure 2).**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gross's method of identifying and transmitting a predefined number of sub channels with high performance between the channel analysis phase and exchange phase of initialization, as suggested by Levine. The motivation being expediting the overall synchronization process by efficiently transmitting optimized parameters like sub channels with high performance without using complex iterative calculation as described by Levine in Column 3, Lines 20-29.

8. Regarding **claim 2**, Gross discloses a method wherein the anticipated highest performance is determined by a signal-to-noise ratio (SNR) of the sub-channels.

(Column 2, Lines 7-14; Column 6, Lines 8-25; The sub-channels on the bit allocation tables of Figures 2 and 5 are selected on the basis of the highest bit that can be transmitted on the sub-channel which as Gross discloses is a function of the SNR.)

9. Regarding **claim 3**, Gross discloses a method wherein the first transceiver identifies a first set of the sub-channels for upstream communication and the second transceiver identifies a second set of the sub-channels for downstream communication.

(Column 5, Lines 45-50)

10. Regarding **claims 4, 10, and 15**, Gross discloses a method wherein the communicating further comprises communicating the sub-channels using a one bit per symbol modulation scheme. **(Column 24, Lines 20-25; Gross shows that BPSK modulation can be used over the sub-channels. It is well known in the art that Binary Phase Shift Keying modulation is simply a one bit per symbol modulation where each symbol could indicate two different states or one bit per symbol.).**

11. Regarding **claims 6, 12 and 17**, Gross discloses a method wherein the act of communicating further comprises communicating a validity check in addition to the sub-channels. **(Column 10, Lines 20-38 and Column 18, Lines 61-67. Gross also teaches in his system all modems are used as dedicated pairs (i.e. ATU-C and ATU-R))**

12. Regarding **claims 7, 13, and 18**, Gross discloses a method wherein the information for initializing the communication link is transmitted using a two bit per symbol modulation scheme. **(Column 24, Lines 20-25; Gross shows that BPSK modulation can be used over the sub-channels. It is well known in the art that Quadrature Phase Shift Keying (QPSK) modulation is simply a two bit per symbol modulation where each symbol could indicate four different states or two bits per symbol. The applicant did not show any unique advantage of using QPSK over n-QAM modulation and these modulations are known in modem applications.)**

13. Regarding **claim 19**, Gross discloses a method wherein indices of a number of tones are included in messages submitted between the transceivers, the number of tones corresponding to a predefined number. **(See Column 23, Lines 24-27 and 37-47)**

14. Regarding **claim 20**, Gross discloses a method wherein indices of the number of tones are selected in an adaptive number. **(See Column 24, Lines 17-25)**

15. **Claims 5, 11 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross in view of Levin as applied to claims 1, 9, and 14 respectively above, and further in view of Seagraves (US Pub. No. 2001/0031016).

Regarding **claims 5, 11 and 16**, the combination of Gross and Levin teaches all aspects of the claimed invention including all modems are used as dedicated pairs (i.e. ATU-C and ATU-R) as set forth in the rejection of claims 1, 9, and 14 respectively but fails to teach the use of cyclic prefix.

Seagraves discloses a method for identifying an improved bit loading assignment for a multi-carrier communication channel.

Seagraves discloses a method, wherein the act of communicating further comprises communicating a cyclic prefix in addition to the sub-channels. **(Paragraphs 28 and 33)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gross's method to incorporate the use of cyclic prefix, the motivation being to compensate for channel distortion that may have resulted from inter-symbol interference.

Response to Arguments

16. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents have been cited for multi-carrier transceiver initialization and configuration:

U.S. Patent 6, 556, 623 to Tzannes et al

U.S. Patent 6, 549, 512 to Wu et al

U. S. Patent 6, 775, 241 to Levin

U. S. Patent 6, 222, 888 to Kao et al


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Habte Mered whose telephone number is 571 272 6046. The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2662

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HM
12-26-2005



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